

WHAT IS CLAIMED IS:

1 1. In a storage environment wherein file data is stored in a first storage
2 location, first data locator information that can be used to identify the location of the file data
3 is stored in a second storage location distinct from the first storage location, a method of
4 moving the first data locator information from the second storage location to a third storage
5 location distinct from the second storage location, the method comprising:

6 generating second data locator information in the third storage location, the
7 second data locator generated based upon the first data locator information such that the file
8 data can be recalled using the second data locator information;

9 enabling recall of the file data using the second data locator information; and

10 deleting the first data locator information from the second storage location,

11 wherein the generating, enabling, and deleting are performed without recalling
12 the file data from the first storage location.

1 2. The method of claim 1 further comprising disabling recall of the file
2 data using the first data locator information prior to generating the second data locator
3 information.

1 3. The method of claim 1 wherein the second storage location is on a
2 storage unit allocated to a first server and the third storage location is on a storage unit
3 allocated to the first server.

1 4. The method of claim 3 further comprising:
2 providing first information indicating that the file data can be recalled using
3 the first data locator information stored in the second storage location

4 wherein generating the second data locator information comprises updating
5 the first information to indicate that the file data can be recalled using the second data locator
6 information stored in the third storage location.

1 5. The method of claim 4 wherein:

2 generating the second data locator further comprises determining if the first
3 information was updated; and

4 enabling recall of the file data using the second data locator information only
5 if it is determined that the first information was updated.

1 6. The method of claim 1 wherein the second storage location is on a
2 storage unit allocated to a first server and the third storage location is on a storage unit
3 allocated to a second server distinct from the first server.

1 7. The method of claim 6 wherein generating the second data locator
2 information comprises:
3 disabling recall of the file data using the first data locator information prior to
4 generating the second data locator information;
5 communicating a first message from the first server to the second server, the
6 message comprising information related to the first data locator information; and
7 wherein the second data locator information is generated by the second server
8 using the information in the first message.

1 8. The method of claim 7 wherein the first message comprises a portion
2 of the first data locator information, the portion including an identifier indicative of the first
3 storage location where the file data is stored.

1 9. The method of claim 7 further comprising:
2 communicating a second message from the second server to the first server
3 indicating generation of the second data locator information by the second server;
4 wherein deleting the first file locator information comprises deleting the first
5 file locator information upon receiving the message from the second server.

1 10. The method of claim 1 wherein the storage environment is managed by
2 a hierarchical storage management (HSM) application, the file data represents migrated data,
3 the first data locator information is stored in a first stub file, and the second data locator
4 information is stored in a second stub file.

1 11. In a storage environment wherein migrated data is stored in a first
2 storage location, a first stub file corresponding to the migrated data is stored in a second
3 storage location, the first stub file storing information that can be used to determine the
4 location of the migrated data, a method of changing the location of the stub file to a third
5 storage location, the method comprising:

6 generating a second stub file in the third storage location, the second stub file
7 generated based upon information from the first stub file, wherein the migrated data can be
8 recalled using the second stub file; and
9 deleting the first stub file from the second storage location;
10 wherein the generating and deleting are performed without recalling the
11 migrated data from the first storage location.

1 12. The method of claim 11 wherein the second storage location is on a
2 storage unit allocated to a first server and the third storage location is on a storage unit
3 allocated to the first server.

1 13. The method of claim 12 further comprising providing a database
2 storing first information indicative of the storage location of a stub file for the migrated data,
3 wherein generating the second stub file comprises:
4 disabling recall of the migrated data using the first stub file;
5 generating the second stub file;
6 updating the first information to indicate that the stub file for the migrated data
7 is stored in the third storage location; and
8 enabling recall of the migrated data using the second stub file.

1 14. The method of claim 11 wherein the second storage location is on a
2 storage unit allocated to a first server and the third storage location is on a storage unit
3 allocated to a second server distinct from the first server.

1 15. The method of claim 14 wherein generating the second stub file
2 comprises:
3 disabling recall of the migrated data using the first stub file;
4 communicating a first message from the first server to the second server, the
5 message comprising information related to the first stub file;
6 generating the second stub file at the second server using the information in
7 the first message;
8 communicating a second message from the second server to the first server
9 indicating generation of the second stub file; and

10 updating first information stored in a database to indicate that the stub file for
11 the migrated data is stored in the third storage location, the first information indicative of the
12 storage location of a stub file corresponding to the migrated data.

1 16. The method of claim 15 wherein the first stub file is deleted by the first
2 server from the second storage location upon receiving the second message from the second
3 server.

1 17. The method of claim 15 wherein the first message comprises a portion
2 of information stored in the first stub file, the portion including an identifier indicative of the
3 first storage location where the migrated data is stored.

1 18. In a storage environment wherein file data is stored in a first storage
2 location, first data locator information that can be used to identify the location of the file data
3 is stored in a second storage location distinct from the first storage location, a computer
4 program product stored on a computer-readable medium for moving the first data locator
5 information from the second storage location to a third storage location distinct from the
6 second storage location, the computer program product comprising:
7 code for generating second data locator information in the third storage
8 location, the second data locator generated based upon the first data locator information such
9 that the file data can be recalled using the second data locator information, wherein the
10 second data locator information is generated without recalling the file data from the first
11 storage location;
12 code for enabling recall of the file data using the second data locator
13 information without recalling the file data from the first storage location; and
14 code for deleting the first data locator information from the second storage
15 location without recalling the file data from the first storage location.

1 19. The computer program product of claim 18 wherein the second storage
2 location is on a storage unit allocated to a first server and the third storage location is on a
3 storage unit allocated to the first server.

1 20. The computer program product of claim 19 further comprising:
2 code for accessing a database storing first information indicating that the file
3 data can be recalled using the first data locator information stored in the second storage
4 location; and

5 wherein the code for generating the second data locator information comprises
6 code for updating the first information to indicate that the file data can be recalled using the
7 second data locator information stored in the third storage location.

1 21. The computer program product of claim 20 wherein:
2 the code for generating the second data locator further comprises code for
3 determining if the first information was updated; and
4 the code for enabling recall of the file data comprises code for enabling the
5 recall of the file data using the second data locator information only if it is determined that
6 the first information was updated.

1 22. The computer program product of claim 18 wherein the second storage
2 location is on a storage unit allocated to a first server and the third storage location is on a
3 storage unit allocated to a second server distinct from the first server.

1 23. The computer program product of claim 22 wherein:
2 the code for generating the second data locator information comprises:
3 code for disabling recall of the file data using the first data locator
4 information prior to generating the second data locator information;
5 code for communicating a first message from the first server to the
6 second server, the message comprising a portion of the first data locator information;
7 code for generating the second data locator information by the second
8 server using the information in the first message; and
9 code for communicating a second message from the second server to
10 the first server indicating generation of the second data locator information by the second
11 server; and

12 wherein the code for deleting the first file locator information comprises code
13 for deleting the first file locator information upon receiving the message from the second
14 server.

1 24. The computer program product of claim 18 wherein the storage
2 environment is managed by a hierarchical storage management (HSM) application, the file
3 data represents migrated data, the first data locator information is stored in a first stub file,
4 and the second data locator information is stored in a second stub file.

1 25. In a storage environment wherein migrated data is stored in a first
2 storage location, a first stub file corresponding to the migrated data is stored in a second
3 storage location, the first stub file storing information that can be used to determine the
4 location of the migrated data, a computer program product stored on a computer-readable
5 medium for changing the location of the stub file to a third storage location, the computer
6 program product comprising:

7 code for generating a second stub file in the third storage location, the second
8 stub file generated based upon information from the first stub file, wherein the migrated data
9 can be recalled using the second stub file and wherein the second stub file is generated
10 without recalling the migrated data from the first storage location; and

11 code for deleting the first stub file from the second storage location without
12 recalling the migrated data from the first storage location.

1 26. The computer program product of claim 25 wherein the second storage
2 location is on a storage unit allocated to a first server and the third storage location is on a
3 storage unit allocated to the first server.

1 27. The computer program product of claim 26 further comprising code for
2 accessing a database storing first information indicative of the storage location of a stub file
3 for the migrated data, wherein the code for generating the second stub file comprises:

4 code for disabling recall of the migrated data using the first stub file;
5 code for generating the second stub file;
6 code for updating the first information to indicate that the stub file for the
7 migrated data is stored in the third storage location; and
8 code for enabling recall of the migrated data using the second stub file.

1 28. The computer program product of claim 25 wherein the second storage
2 location is on a storage unit allocated to a first server and the third storage location is on a
3 storage unit allocated to a second server distinct from the first server.

1 29. The computer program product of claim 28 wherein:
2 the code for generating the second stub file comprises:
3 code for disabling recall of the migrated data using the first stub file;

code for communicating a first message from the first server to the second server, the first message comprising a portion of information stored in the first stub file;

code for generating the second stub file at the second server using the information in the first message;

code for communicating a second message from the second server to the first server indicating generation of the second stub file; and

code for updating first information stored in a database to indicate that the stub file for the migrated data is stored in the third storage location, the first information indicative of the storage location of a stub file corresponding to the migrated data; and

the code for deleting the first stub file comprises code for deleting the first stub file on the first server from the second storage location upon receiving the second message from the second server.

30. A system comprising:

a first server; and

a plurality of storage units including a storage unit storing file data in a first storage location, a storage unit assigned to the first server and storing first data locator information in a second storage location, and a storage unit assigned to the first server and comprising a third storage location distinct from the second storage location, wherein the first data locator information can be used to identify the location of the file data;

wherein the first server is configured to:

generate second data locator information in the third storage location without recalling the file data from the first storage location, the second data locator generated based upon the first data locator information such that the file data can be recalled using the second data locator information;

enable recall of the file data using the second data locator information without recalling the file data from the first storage location; and

delete the first data locator information from the second storage location without recalling the file data from the first storage location.

31. The system of claim 30 further comprising:

a database storing first information indicating that the file data can be recalled using the first data locator information stored in the second storage location; and

4 wherein the first server is configured to update the first information to indicate
5 that the file data can be recalled using the second data locator information stored in the third
6 storage location.

1 32. The system of claim 30 further comprising:
2 a second server executing a hierarchical storage management (HSM)
3 application; and

4 wherein the file data represents migrated data, the first data locator
5 information is stored in a first stub file, and the second data locator information is stored in a
6 second stub file.

1 33. A system comprising:
2 a first server;
3 a second server; and
4 a plurality of storage units including a storage unit storing file data in a first
5 storage location, a storage unit assigned to the first server and storing first data locator
6 information in a second storage location, and a storage unit assigned to the second server and
7 comprising a third storage location distinct from the second storage location, wherein the first
8 data locator information can be used to identify the location of the file data;

9 wherein the second server is configured to:
10 generate second data locator information in the third storage location
11 without recalling the file data from the first storage location, the second data locator
12 generated based upon the first data locator information such that the file data can be recalled
13 using the second data locator information; and

14 enable recall of the file data using the second data locator information
15 without recalling the file data from the first storage location; and

16 wherein the first server is configured to:
17 delete the first data locator information from the second storage
18 location without recalling the file data from the first storage location.

1 34. The system of claim 33 wherein:
2 the first server is configured to:
3 disable recall of the file data using the first data locator information;
4 and

5 communicate a first message to the second server, the first message
6 comprising a portion of the first data locator information;
7 the second server is configured to:
8 generate the second data locator information using the information in
9 the first message; and
10 communicate a second message to the first server indicating generation
11 of the second data locator information; and
12 the first server is configured to delete the first file locator information upon
13 receiving the second message from the second server.

1 35. The system of claim 33 further comprising:
2 a third server executing a hierarchical storage management (HSM)
3 application; and
4 wherein the file data represents migrated data, the first data locator
5 information is stored in a first stub file, and the second data locator information is stored in a
6 second stub file.

1 36. A system comprising:
2 a first server; and
3 a plurality of storage units including a storage unit storing migrated data in a
4 first storage location, a storage unit assigned to the first server and storing a first stub file in a
5 second storage location, and a storage unit assigned to the first server and comprising a third
6 storage location distinct from the second storage location, wherein the first stub file stores
7 information that can be used to determine the location of the migrated data;
8 wherein the first server is configured to:
9 generate a second stub file in the third storage location without
10 recalling the migrated data from the first storage location, the second stub file generated
11 based upon information from the first stub file, wherein the migrated data can be recalled
12 using the second stub file; and
13 delete the first stub file from the second storage location without
14 recalling the migrated data from the first storage location.

1 37. The system of claim 36 further comprising:
2 a database storing first information indicative of the storage location of a stub
3 file for the migrated data;

4 wherein the first server is configured to:
5 disable recall of the migrated data using the first stub file;
6 generate the second stub file;
7 update the first information to indicate that the stub file for the
8 migrated data is stored in the third storage location; and
9 enable recall of the migrated data using the second stub file.

1 38. A system comprising:
2 a first server;
3 a second server; and
4 a plurality of storage units including a storage unit storing migrated data in a
5 first storage location, a storage unit assigned to the first server and storing a first stub file in a
6 second storage location, and a storage unit assigned to the second server and comprising a
7 third storage location distinct from the second storage location, wherein the first stub file
8 stores information that can be used to determine the location of the migrated data;
9 wherein the second server is configured to generate a second stub file in the
10 third storage location without recalling the migrated data from the first storage location, the
11 second stub file generated based upon information from the first stub file, wherein the
12 migrated data can be recalled using the second stub file; and
13 wherein the first server is configured to delete the first stub file from the
14 second storage location without recalling the migrated data from the first storage location.

1 39. The system of claim 38 further comprising:
2 a database storing first information indicative of the storage location of a stub
3 file for the migrated data;
4 wherein the first server is configured to:
5 disable recall of the migrated data using the first stub file;
6 communicate a first message to the second server, the first message
7 comprising a portion of information stored in the first stub file;
8 wherein the second server is configured to:
9 generate the second stub file using the information in the first message;
10 and
11 communicate a second message to the first server indicating generation
12 of the second stub file; and

13 wherein the first server is configured to:
14 update the first information to indicate that the stub file for the
15 migrated data is stored in the third storage location; and
16 delete the first stub file from the second storage location upon receiving the
17 second message from the second server.